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EXAMINER

RIDLEY, BASIA ANNA

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 06/04/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/557,158

Applicant(s)

SANFILIPPO ET AL.

Examiner

Basia Ridley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 April 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

✓ 1. The U.S. Patent Application 09/810,561 cited in the information disclosure statement filed in Paper 5 have been considered, but will not be printed on any patent resulting from this application.

Specification

✓ 2. The disclosure is objected to under 37 CFR 1.74 because it does not contain a brief description of the drawings. Applicant is reminded that the disclosure shall contain a brief description of all drawing figures in addition to a detailed description of all drawing figures.

Applicant's attention is directed to 37 CFR 1.74, which states:

“When there are drawings, there shall be a brief description of the several views of the drawings and the detailed description of the invention shall refer to the different views by specifying the numbers of the figures and to the different parts by use of reference letters or numerals (preferably the latter).”

Appropriate correction is required. No new matter shall be added.

Drawings

✓ 3. The drawing(s) is/are objected to because line(s) indicating means for stream(s) entering and/or leaving system component(s) is/are lacking arrow(s) indicating flow direction. It is not clear if said stream(s), as indicated by reference(s) 4 and 10, is/are entering or leaving the system component(s) 2 and 7. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

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4. The drawing(s) is/are objected to as failing to comply with 37 CFR 1.84(q) because reference character(s) in the drawing figure is/are lacking lead line(s) between itself/themselves and the detail(s) to which it/they refers(s). Applicant is reminded that reference characters which do not need lead lines because they indicate surface or cross-section on which they are placed must be underlined to make it clear that a lead line has not been left out by mistake. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claim 9 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim 9 cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claim 9 has not been further treated on the merits.

6. Claims 7-8 are objected to because of the following informalities: in claim 7, lines 1-3 should be substituted with:

--7. The process according to claim 5 or 6, which further comprises:--
Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim(s) 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dickinson (USP 2,602,809) in view of Davis et al. (USP 4,272,399).

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Regarding claim(s) 1-3, Dickinson, in Fig. 1, disclose(s) similar process for production of synthesis gas comprising the steps of:

- partially oxidizing carbon containing material (14) with oxygen coming from reduction of at least one metal oxide (11) selected from hexavalent chromium oxide, supported on an inert carrier and modified with an alkaline and/or alkali-earth metal, and metal oxides capable of autonomously sustaining the catalytic partial oxidation reaction by means of redox cycle (C9/L39-C10/L52); wherein
- the metal oxides capable of autonomously sustaining the catalytic partial oxidation reaction by means of redox cycle are selected from silver oxide, nickel oxide and lead oxide (C9/L39-50);
- the chromium IV oxide or the other oxides capable of autonomously sustaining the catalytic partial oxidation reaction by means of redox cycle are used in a mixture with other metal oxides, capable of undergoing redox cycles, in such proportion as to maintain the formation reaction of synthesis gas globally exothermic (C3/L12-41).

While Dickinson discloses that desired product of the disclosed process is synthesis gas (C1/L54-55), the reference does not explicitly disclose that a light hydrocarbon can be used as a carbon containing material. Since it was well known at the time of the invention that either solid or gaseous carbon containing materials can be used in the processes producing synthesis gas by partial oxidation with metal oxide as a source of oxygen, as evidenced by Davis et al. (C4/L45-56), and, since the instant specification is silent to unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use gaseous hydrocarbon as a carbon containing material in the process of Dickinson. Doing so would amount to nothing more than use of a known material for its intended use in a known

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environment to accomplish entirely expected result. Additionally, one of ordinary skill in the art at the time the invention was made would be motivated to replace carbon containing material of Dickinson with gaseous hydrocarbon, as taught by Davis et al. by economical considerations. Doing so would not only eliminate the additional steps of handling solid feedstock (e.g. pulverization), but also desired product (i.e. synthesis gas) can be produced using only partial oxidation reactor and regeneration reactor.

Regarding claim 4, Dickinson in view of Davis et al. disclose all of the claim limitations as set forth above. Additionally, while Dickinson does not explicitly disclose said metal oxide being a hexavalent chromium oxide, in a system where chromium is used as the metal oxide, said chromium, inherently, will be oxidized to hexavalent chromium oxide.

Regarding claim(s) 5-8, Dickinson, in Fig. 1, disclose(s) similar process for production of synthesis gas comprising the steps of:

- partially oxidizing carbon containing material (14) with oxygen coming from reduction reaction of an oxidizing system comprising chromium oxide, wherein the chromium oxide is supported on an inert inorganic material modified with an alkaline and/or alkali-earth metal (C9/L39-C10/L52);
- re-oxidizing the chromium oxide by means of air (C4/L20-24) in a reactor (31) maintained at a temperature which is substantially equal to or lower than that present in the reactor where the partial oxidation occurs (C5/L22-42 and C6/L37-55); wherein
- the chromium IV oxide are mixed with other metal oxides, capable of undergoing redox cycles, in such proportion as to maintain the formation reaction of synthesis gas globally exothermic (C3/L12-41);

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- the process further comprising feeding the carbon containing material (14) to a first fluid bed partial oxidation reactor (13) containing solid comprising chromium oxide;
- discharging product gas stream (18) from the head of the first reactor (13);
- collecting at the bottom of the first reactor (13) a solid containing lower chromium oxide and feeding this solid (21) to a second fluid bed regeneration reactor (31) maintained at a temperature substantially equal to or lower than that present in the oxidation reactor (C5/L22-42 and C6/L37-55);
- feeding to the bottom of the second regeneration reactor a stream of air at high temperature (C4/L20-24, Fig. 1);
- recycling the regenerated solid (33) to the first oxidation reactor (13); wherein
- in the first fluid bed oxidation reactor a temperature ranging from 800 to 1100°C is maintained, together with a pressure ranging from 0.5 to 5 MPa (C5/L22-42).

While Dickinson does not explicitly disclose said metal oxide being a hexavalent chromium oxide which is reduced in the first oxidation reactor to Cr_2O_3 , in a system where chromium is used as the metal oxide, said chromium, inherently, will be oxidized to hexavalent chromium oxide and reduced to Cr_2O_3 .

While Dickinson discloses that desired product of the disclosed process is synthesis gas (C1/L54-55), the reference does not explicitly disclose that a light hydrocarbon can be used as a carbon containing material, nor does the reference disclose that a product gas comprising hydrogen and carbon oxides is recovered from the head of the first oxidation reactor. Since it was well known at the time of the invention that either solid or gaseous carbon containing materials can be used in the processes producing synthesis gas by partial oxidation with metal

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oxide as a source of oxygen and that steam can be added directly to the partial gasification reactor to help in controlling the oxidation temperature and allowing use of two, rather than three, process vessels, as evidenced by Davis et al. (Fig. 1, C1/L14-30 and C4/L45-56), and, since the instant specification is silent to unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use gaseous hydrocarbon as a carbon containing material in the process of Dickinson. Doing so would amount to nothing more than use of a known material for its intended use in a known environment to accomplish entirely expected result. Additionally, one of ordinary skill in the art at the time the invention was made would be motivated to replace carbon containing material of Dickinson with gaseous hydrocarbon and to add steam directly to the first oxidation reactor, as taught by Davis et al. by economical considerations. Doing so would not only eliminate the additional steps of handling solid feedstock (e.g. pulverization), but also desired product (i.e. synthesis gas) can be produced using only partial oxidation reactor and regeneration reactor.

9. Claim(s) 1-8 is/are provisionally rejected under 35 U.S.C. 103(a) as being obvious over copending Application No. 09/810,561, which has a common assignee with the instant application, in view of Dickinson (USP 2,602,809).

Copending U.S. Application No. 09/810,561 discloses all of the limitations as recited in claims 1-8 of the instant application, but it does not explicitly disclose the metal oxide being a hexavalent chromium oxide which is reduced in the first oxidation reactor to Cr_2O_3 .

Dickinson establishes equivalency of iron and chromium (C9/L39-50), therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace iron oxide in the process disclosed by copending U.S. Application No. 09/810,561 with

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chromium oxide, as doing so would amount to nothing more than use of a known material for its intended use in a known environment to accomplish entirely expected result. Additionally, in a system where chromium is used as the metal oxide, said chromium, inherently, will be oxidized to hexavalent chromium oxide and reduced to Cr_2O_3 .

Commonly assigned U.S. Application No. 09/810,561, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee is required under 37 CFR 1.78(c) and 35 U.S.C. 132 to either show that the conflicting inventions were commonly owned at the time the invention in this application was made or to name the prior inventor of the conflicting subject matter. Failure to comply with this requirement will result in a holding of abandonment of the application.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g).

This provisional rejection under 35 U.S.C. 103(a) is based upon a presumption of future publication or patenting of the conflicting application.

Double Patenting

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to

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overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1-8 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-25 of copending Application No. 09/810,561 in view of Dickinson (USP 2,602,809).

Claims 1-25 of copending U.S. Application No. 09/810,561 recite all of the limitations as recited in claims 1-8 of the instant application, but they do not explicitly recite the metal oxide being a hexavalent chromium oxide which is reduced in the first oxidation reactor to Cr_2O_3 . Additionally the claims 1-25 of copending U.S. Application No. 09/810,561 do not recite the specific operating conditions (temperatures and pressures) of the respective reactors.

Dickinson establishes equivalency of iron and chromium (C9/L39-50) and teaches specific operating conditions (temperatures and pressures) of synthesis gas production process (C5/L22-42 and C6/L37-55), therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace iron oxide in the process recited by claims 1-25 of copending U.S. Application No. 09/810,561 with chromium oxide, and to operate reactors of said process recited by claims 1-25 of copending U.S. Application No. 09/810,561 at conditions disclosed by Dickinson, as doing so would amount to nothing more than use of a known material for its intended use in a known environment to accomplish entirely expected result. Additionally, in a system where chromium is used as the metal oxide, said chromium, inherently, will be oxidized to hexavalent chromium oxide and reduced to Cr_2O_3 .

This is a provisional obviousness-type double patenting rejection.

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Conclusion

12. In view of the foregoing, none of the claims are allowed.
13. The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 1764.
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (703) 305-5418. The examiner can normally be reached on Monday through Thursday, from 8:30 AM to 7:00 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (703) 308-6824.

The fax phone number for Group 1700 is (703) 872-9311 (for Official papers after Final), (703) 872-9310 (for other Official papers) and (703) 305-6078 (for Unofficial papers). When filing a fax in Group 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communication with the PTO that are not for entry into the file of the application. This will expedite processing of your papers.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Basia Ridley
Examiner
Art Unit 1764

BR


JERRY D. JOHNSON
PRIMARY EXAMINER
GROUP 1100

BR
May 31, 2003